

Work Order ID 80470

80470

Page 1

February-21-12 1:47:00 PM

Item ID: D3676-1

Accept

N900040100

Setup Start *NS1*

Revision ID:

Item Name: Bubble Window

Stop *NS2*

Start Date: 21/02/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 06/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: M.C.S

Date: 12/02/21

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

Draw Nbr

Revision Nbr

D3676

Rev B

100

0.00

100

HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Set up Machine as per folio FTA 018 and D3676 program

x/

Sh
12/03/09

110

0.00

110

HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Cut Blanks to 38" by 52"

x/

Sh
12/03/09

120

0.00

120

THERMOFORMING MACHINE

Thermoform

Memo

0.00

Thermoforming Machine

Thermoform as per Dwg. D3676 and Folio FTA 018Dwg. Rev.

C Folio Rev. C

x/

Sh
12/03/09

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
| | | | | | | | | |
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| | | | | | | | | |

NOTE: Date & initial all entries

80470

February-21-12 1:47:00 PM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 21/02/2012 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 06/03/2012 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Run Start *NR1*

Approvals: _____ **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop ***NR2***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

130 QC2- Inspect parts off machine FAI/FAIB

0.00

130

0.00

QC

Memo

Quality Control

1) Check Surface finish for undesired marks, voids, dimples etc. 2) Check depth of bubble to ensure conformity to drawing tolerances.

140 QC8- Inspect parts - second check

0.00

140

0.00

QC

Memo

Quality Control

| | |
|-----|------|
| 150 | 0.00 |
|-----|------|

150

HAND FINISHING THERMOFORMING

0.00

Thermoform

Memo

Thermoforming Machine

1) Trim off excess flange material
2) Buff out any light scratches or blemishes
3) Etch part number and batch number

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
|------|------|----------------------------------|-----------------------------|---------------------------------|----------------|---------------------------|-----------------------|--------------------------|
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 80470

February-21-12 1:47:00 PM

80470

Page 3

Item ID: D3676-1 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Bubble Window
 Start Date: 21/02/2012 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 06/03/2012 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

| Sequence ID/ Work Center ID | Operation Description | Set Up/ Run Hours | Tool ID | Tool # | Plan Code | Accept Qty | Reject Qty | Reject Number | Insp. Stamp |
|--------------------------------|--|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 160 | QC2- Inspect parts off machine FAI/FAIB | 0.00 | | | | | | | |
| *160* | | | | | | | | | |
| QC | Memo | 0.00 | | | | N | | B | 12/03/15 |
| Quality Control | | | | | | | | | |
| 170 | QC5- Inspect part completeness to step on W/O | 0.00 | | | | | | | |
| *170* | | | | | | | | | |
| QC | Memo | 0.00 | | | | N | | | |
| Quality Control | 1) Visually inspect for clarity, and proper formation. | | | | | | | | |
| 180 | Identify as per dwg & Stock Location: <u>PPD</u> | 0.00 | | | | | | | |
| *180* | | | | | | | | | |
| Packaging | Memo | 0.00 | | | | | | | |
| Packaging | 81608 | | | | | | | | |

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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| DATE | STEP | Description of NC Section A | Corrective Action Section B | | | Verification Section C | Approval Chief Eng | Approval QC Inspector |
| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Work Order ID 80470***80470***

Page 4

February-21-12 1:47:00 PM

Item ID: D3676-1

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Bubble Window

Start Date: 21/02/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 06/03/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

190

QC21- Final Inspection - Work Order Release

0.00

190

QC

Memo

0.00

Quality Control

MLJ 12/03/22

12-03-22

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

Picklist Print

February-21-12 1:47:03 PM

Page 1

Work Order ID: 80470

80470

Parent Item: D3676-1

D3676-1

Parent Item Name: Bubble Window

Start Date: 21/02/2012

Required Date: 06/03/2012

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev A New Product 01/24/2008 DL Verified:JLM
IPP Rev B Change Mat. to .236"" 08/29/2008 DL

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| MACRLICS.236 | | Purchased | | No | | 110 | sf | 158.3138 | 13.75 | 13.75688 | | | |

MACRI ICS 236

Plexiglass G .236"

**

Location

Loc Qty

Loc Code

therm

158.313834

119347

158.313834

13.75688.

DL
12/03/15.

| W/O: | | WORK ORDER CHANGES | | | | | |
|------|------|--------------------|----|------|-----|-------------------------------------|--------------------------|
| DATE | STEP | PROCEDURE CHANGE | By | Date | Qty | Approval Chief Eng / Prod Mgr | Approval QC Inspector |
| | | | | | | | |
| | | | | | | | |

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

| NCR: | | WORK ORDER NON-CONFORMANCE (NCR) | | | | | | |
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| | | | Initial Chief Eng | Action Description Chief Eng | Sign & Date | | | |
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NOTE: Date & initial all entries

| | | |
|------------------------------|--|----------------------|
| DART AEROSPACE LTD | | Work Order: 80470 |
| Description: Busbar Window | | Part Number: D367622 |
| Inspection Dwg: D3676 Rev: C | | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST
THERMOFORMING SECTION

| Description | Accept | Reject | Method of Inspection | Comments |
|---|--------|--------|----------------------|----------|
| Inside Radii less than " | ✓ | | | |
| Shape Definition | ✓ | | | |
| Texture Retention | ✓ | | | |
| Material imperfections such as bumps, cracks, voids, scratching | ✓ | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| | |
|-----------------|----------------|
| Measured by: JB | Date: 12/03/15 |
|-----------------|----------------|

TRIMMING SECTION

| Drawing Dimension | Tolerance | Actual Dimension | Accept | Reject | Method of Inspection | Comments |
|-------------------|-----------|------------------|--------|--------|----------------------|----------|
| 29.1 | 29.250 | 29.25 | ✓ | | TH-05 | |
| 46.0 | | 46.06 | ✓ | | TH-05 | |
| 17.0 | ±0.5 | 17.06 | ✓ | | TH-05 | |
| .090 | | .112 | ✓ | | MX-3 | |
| .070 | | .092 | ✓ | | MX-3 | |
| .050 | | .067 | ✓ | | MX-3 | |
| | | | | | | |
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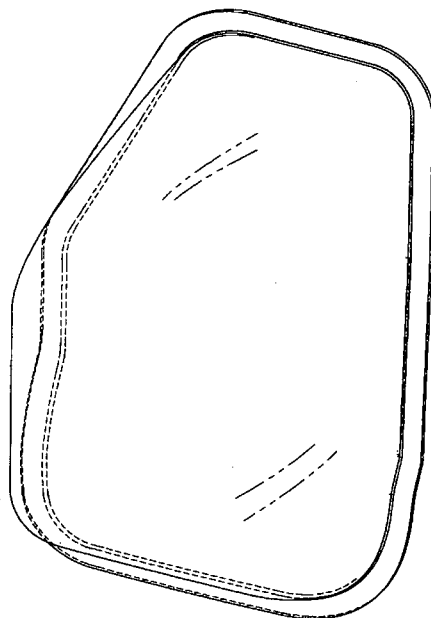
| | |
|-----------------|----------------|
| Measured by: JB | Date: 12/03/15 |
|-----------------|----------------|

| | |
|---------------|----------------|
| Audited by: S | Date: 12/03/15 |
|---------------|----------------|

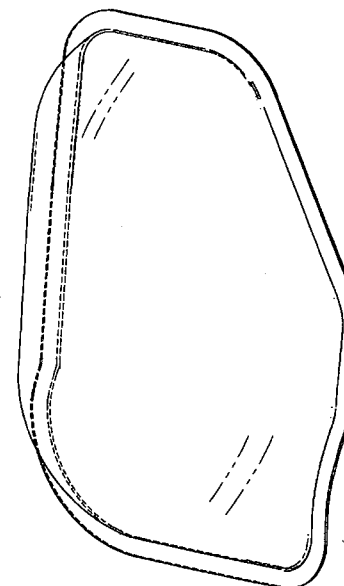
| | |
|-----------------------|-------|
| Preliminary Approval: | Date: |
|-----------------------|-------|

| Rev | Date | Change | Revised by | Approved |
|-----|----------|----------------------------|------------|----------|
| B | 10.04.14 | Added preliminary approval | KJ | |

10-04-14



D3676-1 FULL HEIGHT BUBBLE WINDOW (LH)

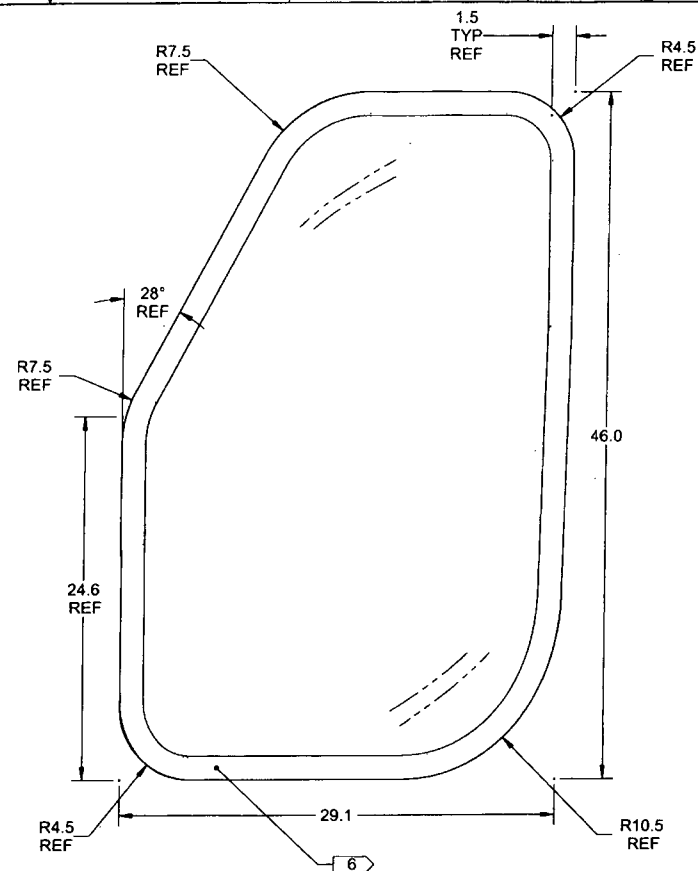
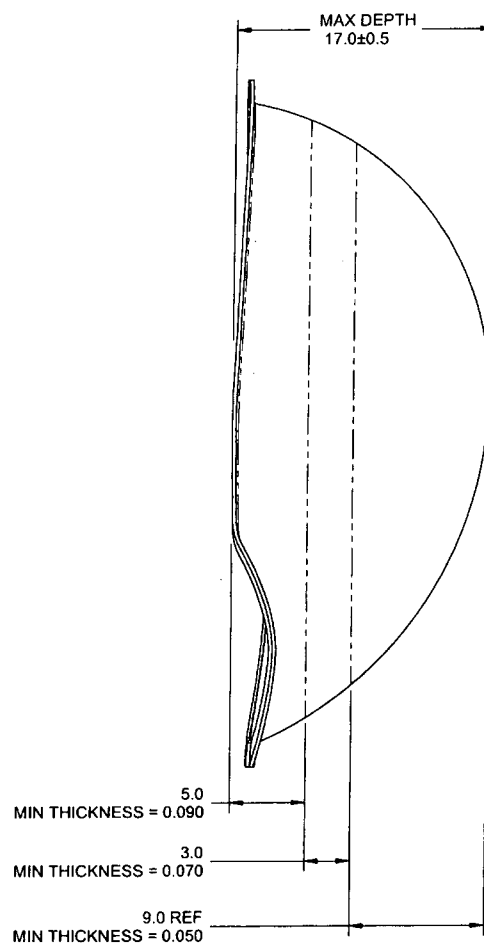


D3676-2 FULL HEIGHT BUBBLE WINDOW (RH)

80470

RELEASED
2012-03-08

| C | ADDED D3676-2 FULL HEIGHT BUBBLE WINDOW (RH). REMOVED NOTES ON SHEET 1, REFORMAT NOTES 6 & 8 ON SHEET 2. D3676-1 WAS "412 BUBBLE WINDOW" NOW "FULL HEIGHT BUBBLE WINDOW (LH)". | AP | 12.03.01 |
|------------|--|---|--------------|
| B | REVISED TOLERANCE ON MINIMUM THICKNESSES (ZN A8/B8-2). REASON: PRODUCTION FACILITY. | MB | 08.10.27 |
| A | NEW ISSUE | MB | 08.02.29 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | MB | DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA | |
| DRAWN | AR | | |
| CHECKED | SEP | DRAWING NO. | REV. C |
| MFG. APPR. | SEP | D3676 | SHEET 1 OF 3 |
| APPROVED | SEP | TITLE | SCALE |
| DE APPR. | SEP | FULL HEIGHT BUBBLE WINDOW | NTS |
| DATE | 12.03.01 | <small>COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> | |



D3676-1 FULL HEIGHT BUBBLE WINDOW (LH)

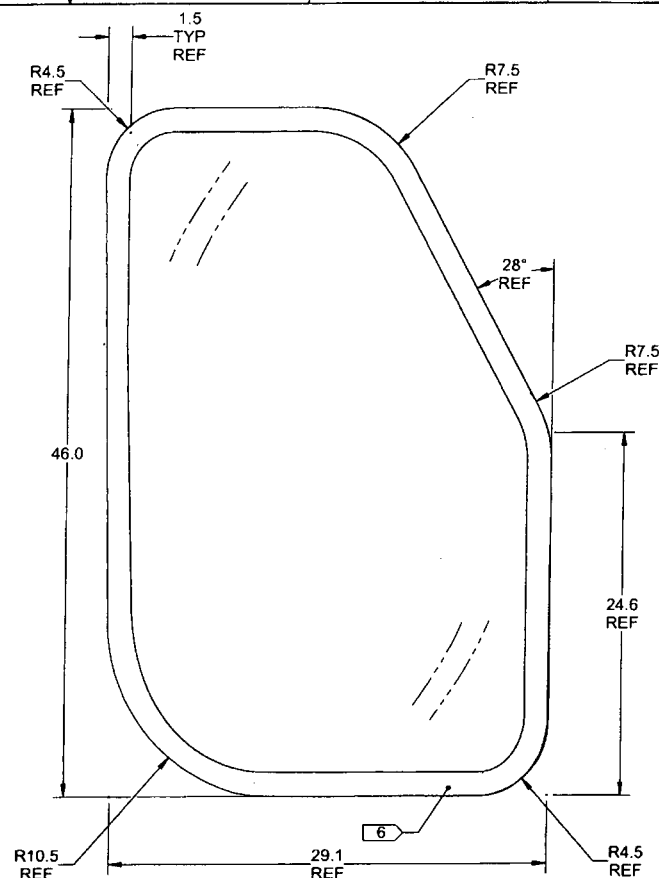
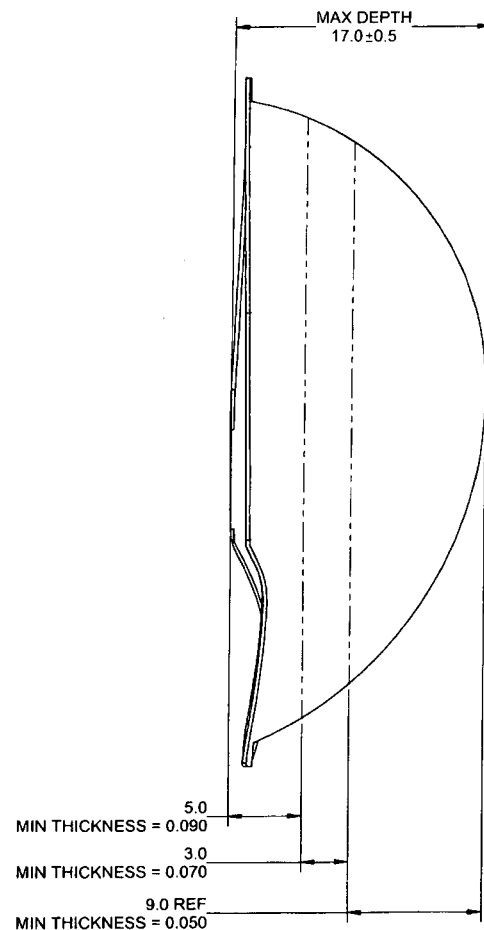
RELEASED
2012-03-08
W

NOTES:

- 1) MATERIAL: PLEXIGLASS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425,
0.236 THICK (REF. DART SPEC. M-ACRYLIC-S.236)
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
- 6) IDENTIFICATION: ENGRAVE P/N "D3676-1" & B/N "BXXXXX" ON FLANGE WITHIN 0.25" OF BUBBLE.
USE 0.125" LETTERS TO MAX. DEPTH OF 0.005" PER DART QSI 044 6.4 WITH VIBRATING STYLUS.
- 7) WEIGHT: 11.0 lbs
- 8) THERMOFORM PER DART QSI 022 USING DT8992

| | | | |
|------------|--------------------|--|--------------|
| DESIGN | MB | DART AEROSPACE LTD | |
| DRAWN | <i>[Signature]</i> | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | <i>[Signature]</i> | DRAWING NO. | REV. C |
| MFG. APPR. | <i>[Signature]</i> | D3676 | SHEET 2 OF 3 |
| APPROVED | <i>[Signature]</i> | TITLE | SCALE |
| DE APPR. | <i>[Signature]</i> | FULL HEIGHT BUBBLE WINDOW | NTS |
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8 7 6 5 4 3 2 1



20470

D3676-2 FULL HEIGHT BUBBLE WINDOW (RH)

RELEASED
2012-03-01

NOTES:

- 1) MATERIAL: PLEXIGLASS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425,
0.236 THICK (REF. DART SPEC. M-ACRYLIC-S.236)
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
- 6) IDENTIFICATION: ENGRAVE P/N "D3676-2" & B/N "BXXXXX" ON FLANGE WITHIN 0.25" OF BUBBLE.
USE 0.125" LETTERS TO MAX. DEPTH OF 0.005" PER DART QSI 044 6.4 WITH VIBRATING STYLUS.
- 7) WEIGHT: 11.0 lbs
- 8) THERMOFORM PER DART QSI 022 USING DT9794

| | | | |
|------------|----------|--|--------------|
| DESIGN | MB | DART AEROSPACE LTD | |
| DRAWN | AP | HAWKESBURY, ONTARIO, CANADA | |
| CHECKED | AP | DRAWING NO. | REV. C |
| MFG. APPR. | AP | D3676 | SHEET 3 OF 3 |
| APPROVED | AP | TITLE | SCALE |
| DE APPR. | AP | FULL HEIGHT BUBBLE WINDOW | NTS |
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8 7 6 5 4 3 2 1